



standard vector

state number n	音節	標準ベクトル $[a_n, M]$
1	あA	$[a_{1,1} \quad a_{1,2} \quad a_{1,3} \quad \dots \quad a_{1,M}]$
2	いI	$[a_{2,1} \quad a_{2,2} \quad a_{2,3} \quad \dots \quad a_{2,M}]$
3	うU	$[a_{3,1} \quad a_{3,2} \quad a_{3,3} \quad \dots \quad a_{3,M}]$
4	えE	$[a_{4,1} \quad a_{4,2} \quad a_{4,3} \quad \dots \quad a_{4,M}]$
5	おO	$[a_{5,1} \quad a_{5,2} \quad a_{5,3} \quad \dots \quad a_{5,M}]$
6	かKA	$[a_{6,1} \quad a_{6,2} \quad a_{6,3} \quad \dots \quad a_{6,M}]$
⋮	⋮	⋮
10	こKO	$[a_{10,1} \quad a_{10,2} \quad a_{10,3} \quad \dots \quad a_{10,M}]$
11	さSA	$[a_{11,1} \quad a_{11,2} \quad a_{11,3} \quad \dots \quad a_{11,M}]$
⋮	⋮	⋮
16	たTA	$[a_{16,1} \quad a_{16,2} \quad a_{16,3} \quad \dots \quad a_{16,M}]$
17	ちTI	$[a_{17,1} \quad a_{17,2} \quad a_{17,3} \quad \dots \quad a_{17,M}]$
⋮	⋮	⋮
21	てKA	$[a_{21,1} \quad a_{21,2} \quad a_{21,3} \quad \dots \quad a_{21,M}]$
22	てNI	$[a_{22,1} \quad a_{22,2} \quad a_{22,3} \quad \dots \quad a_{22,M}]$
⋮	⋮	⋮
26	はHA	$[a_{26,1} \quad a_{26,2} \quad a_{26,3} \quad \dots \quad a_{26,M}]$
⋮	⋮	⋮
31	ふFA	$[a_{31,1} \quad a_{31,2} \quad a_{31,3} \quad \dots \quad a_{31,M}]$
⋮	⋮	⋮
36	へHA	$[a_{36,1} \quad a_{36,2} \quad a_{36,3} \quad \dots \quad a_{36,M}]$
37	へU	$[a_{37,1} \quad a_{37,2} \quad a_{37,3} \quad \dots \quad a_{37,M}]$
38	へYO	$[a_{38,1} \quad a_{38,2} \quad a_{38,3} \quad \dots \quad a_{38,M}]$
39	へRA	$[a_{39,1} \quad a_{39,2} \quad a_{39,3} \quad \dots \quad a_{39,M}]$
⋮	⋮	⋮
44	ほHO	$[a_{44,1} \quad a_{44,2} \quad a_{44,3} \quad \dots \quad a_{44,M}]$
45	ほKO	$[a_{45,1} \quad a_{45,2} \quad a_{45,3} \quad \dots \quad a_{45,M}]$
46	ほN	$[a_{46,1} \quad a_{46,2} \quad a_{46,3} \quad \dots \quad a_{46,M}]$
⋮	⋮	⋮
N	⋮	$[a_{N,1} \quad a_{N,2} \quad a_{N,3} \quad \dots \quad a_{N,M}]$

Fig. 3

AT THE TIME OF SPEAKER ADAPTATION, FEATURE VECTOR $[s_1, M]$
 GENERATED IN THE FEATURE VECTOR GENERATION SECTION 12

Frame number

Time
時間

フレーム番号 i	話者適応の際に特徴ベクトル生成部12 で生成される特徴ベクトル $[s_1, M]$
1	$[s_{1,1} \quad s_{1,2} \quad s_{1,3} \quad \dots \quad s_{1,M}]$
2	$[s_{2,1} \quad s_{2,2} \quad s_{2,3} \quad \dots \quad s_{2,M}]$
3	$[s_{3,1} \quad s_{3,2} \quad s_{3,3} \quad \dots \quad s_{3,M}]$
4	$[s_{4,1} \quad s_{4,2} \quad s_{4,3} \quad \dots \quad s_{4,M}]$
5	$[s_{5,1} \quad s_{5,2} \quad s_{5,3} \quad \dots \quad s_{5,M}]$
6	$[s_{6,1} \quad s_{6,2} \quad s_{6,3} \quad \dots \quad s_{6,M}]$
7	$[s_{7,1} \quad s_{7,2} \quad s_{7,3} \quad \dots \quad s_{7,M}]$
8	$[s_{8,1} \quad s_{8,2} \quad s_{8,3} \quad \dots \quad s_{8,M}]$
9	$[s_{9,1} \quad s_{9,2} \quad s_{9,3} \quad \dots \quad s_{9,M}]$
10	$[s_{10,1} \quad s_{10,2} \quad s_{10,3} \quad \dots \quad s_{10,M}]$
11	$[s_{11,1} \quad s_{11,2} \quad s_{11,3} \quad \dots \quad s_{11,M}]$
12	$[s_{12,1} \quad s_{12,2} \quad s_{12,3} \quad \dots \quad s_{12,M}]$
13	$[s_{13,1} \quad s_{13,2} \quad s_{13,3} \quad \dots \quad s_{13,M}]$
14	$[s_{14,1} \quad s_{14,2} \quad s_{14,3} \quad \dots \quad s_{14,M}]$
15	$[s_{15,1} \quad s_{15,2} \quad s_{15,3} \quad \dots \quad s_{15,M}]$
16	$[s_{16,1} \quad s_{16,2} \quad s_{16,3} \quad \dots \quad s_{16,M}]$
17	$[s_{17,1} \quad s_{17,2} \quad s_{17,3} \quad \dots \quad s_{17,M}]$
18	$[s_{18,1} \quad s_{18,2} \quad s_{18,3} \quad \dots \quad s_{18,M}]$
19	$[s_{19,1} \quad s_{19,2} \quad s_{19,3} \quad \dots \quad s_{19,M}]$
20	$[s_{20,1} \quad s_{20,2} \quad s_{20,3} \quad \dots \quad s_{20,M}]$
⋮	⋮
29	$[s_{29,1} \quad s_{29,2} \quad s_{29,3} \quad \dots \quad s_{29,M}]$
30	$[s_{30,1} \quad s_{30,2} \quad s_{30,3} \quad \dots \quad s_{30,M}]$

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Fig. 4

Flame number

AT THE TIME OF SPEAKER ADAPTATION, FEATURE VECTOR $[c_i, M]$ OUTPUTTED FROM MULTIPLICATIVE NOISE REMOVAL SECTION 9

Time
時間
↓

フレーム番号 i	話者適応の際に乗法性ノイズ除去部9 から出力される特徴ベクトル $[c_{i, M}]$
1	$[c_{1, 1} \quad c_{1, 2} \quad c_{1, 3} \quad \dots \quad c_{1, M}]$
2	$[c_{2, 1} \quad c_{2, 2} \quad c_{2, 3} \quad \dots \quad c_{2, M}]$
3	$[c_{3, 1} \quad c_{3, 2} \quad c_{3, 3} \quad \dots \quad c_{3, M}]$
4	$[c_{4, 1} \quad c_{4, 2} \quad c_{4, 3} \quad \dots \quad c_{4, M}]$
5	$[c_{5, 1} \quad c_{5, 2} \quad c_{5, 3} \quad \dots \quad c_{5, M}]$
6	$[c_{6, 1} \quad c_{6, 2} \quad c_{6, 3} \quad \dots \quad c_{6, M}]$
7	$[c_{7, 1} \quad c_{7, 2} \quad c_{7, 3} \quad \dots \quad c_{7, M}]$
8	$[c_{8, 1} \quad c_{8, 2} \quad c_{8, 3} \quad \dots \quad c_{8, M}]$
9	$[c_{9, 1} \quad c_{9, 2} \quad c_{9, 3} \quad \dots \quad c_{9, M}]$
10	$[c_{10, 1} \quad c_{10, 2} \quad c_{10, 3} \quad \dots \quad c_{10, M}]$
11	$[c_{11, 1} \quad c_{11, 2} \quad c_{11, 3} \quad \dots \quad c_{11, M}]$
12	$[c_{12, 1} \quad c_{12, 2} \quad c_{12, 3} \quad \dots \quad c_{12, M}]$
13	$[c_{13, 1} \quad c_{13, 2} \quad c_{13, 3} \quad \dots \quad c_{13, M}]$
14	$[c_{14, 1} \quad c_{14, 2} \quad c_{14, 3} \quad \dots \quad c_{14, M}]$
15	$[c_{15, 1} \quad c_{15, 2} \quad c_{15, 3} \quad \dots \quad c_{15, M}]$
16	$[c_{16, 1} \quad c_{16, 2} \quad c_{16, 3} \quad \dots \quad c_{16, M}]$
17	$[c_{17, 1} \quad c_{17, 2} \quad c_{17, 3} \quad \dots \quad c_{17, M}]$
18	$[c_{18, 1} \quad c_{18, 2} \quad c_{18, 3} \quad \dots \quad c_{18, M}]$
19	$[c_{19, 1} \quad c_{19, 2} \quad c_{19, 3} \quad \dots \quad c_{19, M}]$
20	$[c_{20, 1} \quad c_{20, 2} \quad c_{20, 3} \quad \dots \quad c_{20, M}]$
⋮	⋮
29	$[c_{29, 1} \quad c_{29, 2} \quad c_{29, 3} \quad \dots \quad c_{29, M}]$
30	$[c_{30, 1} \quad c_{30, 2} \quad c_{30, 3} \quad \dots \quad c_{30, M}]$

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Fig. 5

Time
時間
↓

Flame number flame 番号 i	State number 状態番号 n	
1	1 0	{ (#) KO
2	1 0	
3	1 0	
4	1 0	
5	1 0	
6	1 0	{ (#) N
7	4 6	
8	4 6	
9	4 6	{ (#) N2
10	4 6	
11	2 2	
12	2 2	
13	2 2	{ (#) T1
14	2 2	
15	1 7	
16	1 7	
17	1 7	{ (#) WA
18	1 7	
19	4 4	
20	4 4	
⋮	⋮	
29	4 4	
30	4 4	

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average feature vector state number standard vector

	平均特徴ベクトル [s ⁻ _{n, u}]	状態番号 n	標準ベクトル [a _{n, u}]
average of i = 1 ~ 6 の平均	[s ⁻ _{10, 1} ... s ⁻ _{16, u}]	10	[a _{10, 1} ... a _{10, u}]
average of i = 7 ~ 10 の平均	[s ⁻ _{46, 1} ... s ⁻ _{46, u}]	46	[a _{46, 1} ... a _{46, u}]
average of i = 11 ~ 14 の平均	[s ⁻ _{22, 1} ... s ⁻ _{22, u}]	22	[a _{22, 1} ... a _{22, u}]
Average of i = 15 ~ 18 の平均	[s ⁻ _{17, 1} ... s ⁻ _{17, u}]	17	[a _{17, 1} ... a _{17, u}]
average of i = 19 ~ 30 の平均	[s ⁻ _{44, 1} ... s ⁻ _{44, u}]	44	[a _{44, 1} ... a _{44, u}]

[illegible]

FIG. 8

State number
syllableAdaptive vector of acoustic HMM
after updated.

状態番号 n	音節	更新後の更新音声HMMの適応ベクトル
1	ア	[X _{1,1} X _{1,2} X _{1,3} X _{1,M}]
2	イ	[X _{2,1} X _{2,2} X _{2,3} X _{2,M}]
3	ウ	[X _{3,1} X _{3,2} X _{3,3} X _{3,M}]
4	エ	[X _{4,1} X _{4,2} X _{4,3} X _{4,M}]
5	オ	[X _{5,1} X _{5,2} X _{5,3} X _{5,M}]
6	カ	[X _{6,1} X _{6,2} X _{6,3} X _{6,M}]
⋮	⋮	⋮
10	コ	[X _{10,1} X _{10,2} X _{10,3} X _{10,M}]
11	サ	[X _{11,1} X _{11,2} X _{11,3} X _{11,M}]
⋮	⋮	⋮
16	タ	[X _{16,1} X _{16,2} X _{16,3} X _{16,M}]
17	チ	[X _{17,1} X _{17,2} X _{17,3} X _{17,M}]
⋮	⋮	⋮
21	ナ	[X _{21,1} X _{21,2} X _{21,3} X _{21,M}]
22	ニ	[X _{22,1} X _{22,2} X _{22,3} X _{22,M}]
⋮	⋮	⋮
26	ハ	[X _{26,1} X _{26,2} X _{26,3} X _{26,M}]
⋮	⋮	⋮
31	マ	[X _{31,1} X _{31,2} X _{31,3} X _{31,M}]
⋮	⋮	⋮
36	ヤ	[X _{36,1} X _{36,2} X _{36,3} X _{36,M}]
37	ユ	[X _{37,1} X _{37,2} X _{37,3} X _{37,M}]
38	ヨ	[X _{38,1} X _{38,2} X _{38,3} X _{38,M}]
39	ラ	[X _{39,1} X _{39,2} X _{39,3} X _{39,M}]
⋮	⋮	⋮
44	ワ	[X _{44,1} X _{44,2} X _{44,3} X _{44,M}]
45	ヰ	[X _{45,1} X _{45,2} X _{45,3} X _{45,M}]
46	ヱ	[X _{46,1} X _{46,2} X _{46,3} X _{46,M}]
⋮	⋮	⋮
N	⋮	[X _{N,1} X _{N,2} X _{N,3} X _{N,M}]

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